

**Notice of Allowability**

Application No.

10/619,797

Examiner

Michael Trinh

Applicant(s)

ERHARDT ET AL.

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Election 9/16/04 and Telephone Interview 9/23/04.
2. ☒ The allowed claim(s) is/are 1-13.
3. ☒ The drawings filed on 14 July 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
  1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 9/26/03
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date 20040923.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

  
Michael Trinh  
Primary Examiner

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## **DETAILED ACTION**

\*\*\* This office action is in response to filing of the Application on July 14, 2003.

### ***Restriction & Election***

1. During a telephone conversation with Mr. Andrew Romero on September 16, 2004 a provisional election was made with traverse to prosecute the invention of method claims 1-13.

\*\* Claims 14-20 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Examiner's Amendment***

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

3. Authorization for this Examiner's Amendment was given in a telephone interview with Mr. Andrew Romero on September 23, 2004.

### **IN THE CLAIMS:**

- \* Cancel non-elected claims 14-20.
- \* In claim 1, line 6, after "pattern in", change "in the hard" to --in the first hard--.
- \* In claim 1, line 10, after "pattern in", change "the hard mask" to --the first hard mask--.
- \* In claim 1, line 17, after "line in", change "the hard mask" to --the first hard mask--.
- \* In claim 1, line 25, after "pattern in", change "the hard mask" to --the first hard mask--.
- \*\*\* In claim 2, line 2, after "comprises", insert --a material of--.
- \*\*\* Claim 3, line 1, after "the layer includes", insert --a material of--.

### ***Allowable Subject Matter***

4. Claims 1-13 are allowed.

5. The following is a statement of reasons for the indication of allowable subject matter:

The references including Tani (5,290,723), Kimoshita (6,780,708), Singh (6,416,933), etc., of record, alone or in combination, do not anticipatively disclose each and every aspect of the claimed method of forming a layer comprising a line and space pattern over a substrate

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including a first region and a second region, or fairly make a prima facie obvious case of the claimed method, in combination with other processing claimed limitations as recited in base claim, the inclusion of etching the layer to form the line and space pattern in the second region corresponding to the first master line and space pattern in the first hard mask layer in the second region, wherein a line in the second region includes a first critical dimension (B) achievable at the resolution limit, wherein a first master line and space pattern in the first hard mask layer includes at least one line and at least one space of a minimum dimension dictated by a resolution limit of lithography; depositing a second hard mask layer over the patterned first hard mask layer; etching the second hard mask layer to form spacers on sidewalls of at the least one line in the first hard mask layer in the first region, wherein the minimum dimension of the at least one space in the first hard mask layer in the first region is reduced to a second critical dimension (A) less than achievable at the resolution limit, to form spacers on sidewalls of the at least one line in the second region; and etching the layer to form the line and space pattern in the first region corresponding to the first master line and space pattern in the first hard mask layer in the first region, wherein a space in the first region includes the second critical dimension (A) less than achievable by the resolution limit.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael M. Trinh whose telephone number is (571) 272-1847. The examiner can normally be reached on M-F: 8:30 Am to 5:00 Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on (571) 272-1852. The fax phone numbers for the organization where this application proceeding is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

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Michael Trinh  
Primary Examiner